

REMARKS/ARGUMENT

Claims 1-18 are pending. The specification has been amended as to matters of form, including the one pointed out in the Office Action. Claims 14-18 have been added to provide Applicant with a more complete scope of protection. This amendment is believed to overcome the objection to the specification. Claims 1, 5 and 12 have been amended solely to improve their idiomatic English, with no change of scope. The amendments do not narrow the claims in any way. Claims 1, 5, 12 and 14-18 are the independent claims.

Applicant notes with appreciation the indication that Claims 6-11 and 13 would be allowable if rewritten so as not to depend from a rejected claim. However, because Applicant believes the base claims are patentable for at least the reasons delineated below, those claims have not been so rewritten.

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as obvious from applicant's prior art in view of U.S. Patent 6,044,115 (Horiike et al.). Claim 12 was rejected under 35 U.S.C. § 103(a) as obvious from applicant's prior art in view of Horiike et al. and further in view of U.S. Patent 4,651,206 (Ohki). Applicant traverses and submits that independent claims 1, 5 and 12, as well as new claims 14-18, are patentable for at least the following reasons.

Claim 1 is directed to a moving picture encoding apparatus for encoding successive input image signals, comprising: block significance determining means for determining block

significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices; map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block; adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal.

By virtue of the recited structure, encoding can be performed with greater assurance that particularly significant blocks will trigger a refresh action, and thus will be intra-frame encoded, and not inter-frame forecast encoded.

In prior art systems, as shown for example in Fig. 1, the decision as to when to perform a refresh operation during encoding is made based upon an error power level 119 output from the motion estimating section 104. When this signal is above a predetermined level, it causes a forced refresh by means of a refresh signal from the refresh signal generator 103. The refresh signal causes the encoder to freshly intra-encode a block from the actual incoming signal, rather than inter-encode the block based on a previously encoded block in the frame memory.

However, a problem arises with the prior art method because basing the refresh decision solely on an error level fails to take into account the significance of the block being encoded. As a result, the prior art encoder may fail to perform refresh on a block that has particular significance.

The present invention, as defined in claim 1, adds determination of block significance, the determination result of which, *inter alia*, controls generation of a refresh based upon the determined significance of the block. This feature is not taught in the prior art discussed in the application.

The Office Action relies on the complexity calculator of Horiike to supply this feature. However, in Horiike, the complexity calculator is used strictly in the context of the quantization, which is a part of the *intra*-frame processing. In particular, the complexity calculator is used for deciding a modified quantization scale.

Thus, while the complexity calculator of Horiike relates, to some extent, to image significance, it is not used in a refresh decision at all. Accordingly, it does not remedy the failure of the applicant's prior art to meet the recited features of determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices, or for generating, *according to the block significance*, a refresh map signal representing priority of refresh processing for each block, still less referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a

frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing. Neither reference teaches or suggests the salient feature of claim 1 by which, among other things, the timing of refresh encoding is determined based upon a determination of the significance of the block to be encoded.

Moreover, because the complexity calculator is not used in any operation relating to a refresh operation, there would have been no motivation to have made the combination in any event.

Accordingly, claim 1 is clearly patentable over the prior art shown in the application and Horiike, either separately or in any combination. New claim 14 is a corresponding method claim that is believed patentable for the same reasons as claim 1.

Independent claims 5, 12 and 15-18 each recite substantially similar features and are believed patentable for substantially similar reasons.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

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In view of the foregoing remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

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Respectfully submitted,

By


Joseph W. Ragusa

Registration No.: 38,586

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

1177 Avenue of the Americas

41st Floor

New York, New York 10036-2714

(212) 835-1400

Attorney for Applicant